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THE CHRONICLE
of Early American Industries

VOLUME III, No. 12 JULY, 1947

PAPER INDUSTRY I, 1810 - 1860

by CHARLES I. FOSTER

As the great presses thundered away printing the publications of societies by the millions and newspapers multiplied, each dedicated to the propagating of its favorite cause with this magic power, the country's appetite for paper grew in proportion. It is interesting to note the efforts of the paper mills to meet the insistent demand for their product, for the art of papermaking was a slow and laborious process.

The American paper mills met this challenge to their productive capacity by the gradual mechanization of their handicraft; they adapted machines to perform each operation in much the same way as it had been done previously by hand and throughout the whole long process maintained certain handicraft characteristics of their art. They used machines and yet the manufacture of paper refused to become mechanical.

In the early days of the art when only manpower was used, the papermaker pounded cotton and linen rags in a mortar with a pestle until they disintegrated into fibers. He mixed these rag fibers with water in a vat and into that vat he dipped his mold, a wooden frame about twenty inches wide by thirty inches long, covered with a wire mesh or screen and surrounded by a removable wooden edge or "deckle" which served to retain on the mold the desired quantity of the "stuff." As the papermaker lifted his mold from the vat, he agitated it gently to distribute the stuff evenly over the wire and held it long enough to permit the water to run through the screen and leave on the wire that meshed layer of fibers which was to be a sheet of paper. Then he removed the deckle,

* See Editor's note.

Continued on page 105

THE OX YOKE

by MALCOLM WATKINS

As ancient and accepted a device as the ox-yoke has received scant attention from annotators, past or present. Like most common things, ox-yokes have been taken for granted both in their own day, and in ours.

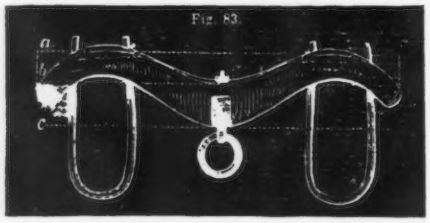
The ox-yoke, most familiar at present as a rusticating feature in the yards of country summer homes, dates back in its present form at least to Roman times. According to *Knight's Mechanical Dictionary,* Columella in 50 B. C. condemned yoking by the horns, which was then generally practiced, stating that oxen "can pull better by the neck and breast."

In the American edition of "The Domestic Encyclopedia" (Philadelphia, 1802), Dr. James Mease, the American editor of the work, inserts the following comment into the original text: "The absurd mode generally followed of yoking oxen, is one cause of their slow pace; and yet farmers without reflecting upon the awkwardness of the position in which oxen draw, when their heads and necks are unnaturally pressed far below the line of their backs, continue to use the yoke because their *fathers* did, thus loosing full one-half the beasts' power. Mr. Cooper (Young's Eastern Tour) uses collars as on horses, except they are buckled on with the narrow end open and downward; the chains are fastened to them in the same direction as on a horse harness, the line of the chains being almost up to their backs, which is necessary from the different shape of horses and oxen. They draw when in harness, abreast, in pairs; singly, or in a line, and walk as fast as horses. Mr. Bordley says "he saw a wagon in Pennsylvania, drawn by two bulls and two oxen, bridled and geered in harness and collars; and in Maryland, he saw a woman going to a race with her chest of cakes, and

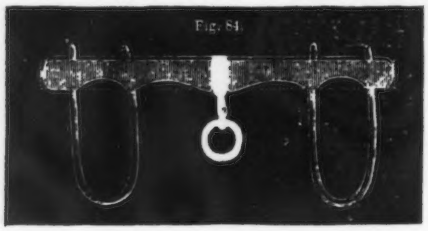
sitting in a truck drawn by a bull bridled and guided by herself; and that in the same state, one Sutton Sicklemore, rode a bull about the country!"

In spite of the lady with the cakes and Mr. Sicklemore and his bull, the ancient ox-yoke which Dr. Mease so strongly criticized continued to be the accepted device. Nevertheless, it appears that the isolation of farm communities in the interior country led to a relaxing of skill in the manufacture of ox-yokes, just as in other things. As Mrs. Rawson states *(Handwrought Ancestors)*, they were sometimes manufactured in this country in shops, either as entire units, or with bows and yokes fabricated separately. They were also made at home, especially the yoke portions. Sturbridge, a typical interior New England town, had an ox-bow shop in its early days, but presumably the yokes were left to the individual farmer to make for himself.

In 1855 John J. Thomas in *Farm Implements* takes notice of this. He complains, "It may be that the farmer who has had much experience may be able to judge of all these things (designing his tools) without a knowledge of the science. But this scientific knowledge would serve to strengthen his experience, and enable him to judge more accurately and understandingly by showing him the reasons . . . . Even so simple a form as that of an ox-yoke is often made unnecessarily heavy. Fig. 82 represents



one that is faulty in this respect, by having been cut from a piece of timber as wide as the dotted lines *a, c*, and being thus weakened, it requires to be correspondingly large. Fig. 84 is equally strong, much



lighter, and is easily made from a stick of timber only as wide as *a, b*, in the former figure."

As late as 1867 one E. O. Shultz of Oconto County, Wisconsin, wrote to the *American Agriculturist:* "There is no need of having an ox's neck so sore as to require treatment, or to stop his work, if we have a yoke that is fit for a team to work in. There is not one man in ten that can make a yoke. Any one can make a stick with holes bored in it, no matter how, so that a pair of bows can be put in. The oxen can suffer the consequences. If there is a law against cruelty to animals, this is one that should be investigated. I have made a great many yokes, and any one who has used one of them, comes to me if he wants another. There is no place where oxen are made to draw so hard as they are in the lumber woods, and I have not seen a single ox laid up, and have heard of but very few that were sore enough to require treatment, when my yoke was used."

He goes on to submit his sketches, and comments, "Yellow birch is about the best timber you can use. Find a log large enough to split, in order to work the heart out, as such a one will not be so liable to check in seasoning; square it 8 x 10, then lay your yoke out (as in Figs. 2 and 3). Beginning where

Fig. 3.—YOKE MARKED OUT.

the staple is to come, measure 11 inches each way, then 9 inches, and then 8 inches, on each side, making in all 56 inches. Be sure and bore your holes with three-quarters of an inch slant to the foot, to each hole, and you will have no bother in getting a well-shouldered bow in. Work the neck out so that the holes will come even on the under side, say like this (Fig. 4), not this (Fig. 5), then shape it both ways

Fig. 4. Fig. 5.

alike, so that whichever way the yoke lies on the neck there shall be no lump or ridge. The model will show you how it should be; make yokes just like it, and I warrant there will be no sore necks. For a yoke to draw on a chain, the stick should be 8½ x 11

Continued on page 106

Paper Industry—*Continued*

handed the mold to his helper, the "coucher," placed the deckle on a fresh mold and started over.

The coucher had before him a piece of felt of the same size as the mold which he received from the vatman. Against this felt he pressed the fiber-coated side of the mold and then gently withdrew the mold. As the fibers clung to the felt and left the wire of the mold, a sheet of paper was born. Over the newly formed paper the coucher placed a fresh layer of felt and repeated the operation as the vatman handed him another mold with its burden of fibers.

Drying this sodden paper was indeed a tedious process. When the pile of alternating felt and paper reached a convenient height, the workers lifted it to a press for a gentle squeeze which removed some excess water and matter the fibers more firmly together. Then it was necessary to peel each tender sheet from its mother felt, place it on another felt, give the pile a harder pinch in the press and repeat the operation. When the still damp paper was judged to be sufficiently strong, the papermakers piled it sheet to naked sheet for another, but gentler, nip in the great press, the start of another repetitious process: between each increasingly severe squeeze the craftsmen carefully peeled the tender layers apart and turned them upside down, changing their order, so that the two sides might be finished alike. The final step in drying was to take the pile of paper into a ventilated loft and hang swatches of four or five sheets over poles or ropes, there to stay for weeks, if necessary, to dry and season.

The first step in mechanization of papermaking was taken long before the period with which we are concerned. Stamping mills, which consisted of iron-faced rams pounding in armored tubs, had replaced the mortar and pestle in shredding the rags to fibers. In turn, a marked improvement over this stamping mill resulted from German-Dutch competition early in the eighteenth century, when the Dutch found their wind-driven stampers unable to compete effectively with German waterpower. The Dutch devised an oval tub partially divided longitudinally by a central fin. Between this central support and the edge of the tub they mounted a cylinder about twenty-six inches in diameter, armed with iron bars which bore with a regulated pressure against a similarly armed bedplate in the bottom of the tub. By this means a mixture of rags and water could be circulated around the tub with a continuous shredding and hydrating of the fibers. This "Hollander" or beating engine is still in use today with only minor improvements.

An effective device indeed, the Hollander could also be used for washing the rags by easing the pressure of the cylinder against the bedplate and increasing its speed. Invented in 1750, the Hollander reached America in 1775 and generally replaced the stamping mills here during the following five years.

The only other step in mechanization which had been introduced by 1810, the time when our study opens, was a power-driven rotary duster for removing loose dirt and lint from rags. Meanwhile, the color and quality of the product had been improved by the practice of putting bleach into the washwater. This not only whitened the stock but softened the fibers to make easier beating.

The process of papermaking as it functioned in the United States in 1810 may be better understood if we study a typical mill in operation at that time. For this purpose, the Burbank mill in Millbury, Massachusetts, built in 1800, will serve admirably. This was a two-vat mill of the size usual for those days; that is, it had two vats at which master papermakers dipped their molds. A twelve-foot water wheel supplied power to drive two Hollanders for washing and bleaching, a rotary duster and a grindstone on which to sharpen the bedplates of the Hollander.

We may readily visualize the daily work of the mill. Ten or twelve girls sat at large boxes each of which was armed at one corner with a sharp scythe on which they cut dirty cotton and linen rags to bits, freed them from bone and metal and dropped them into the box, a foul and dangerously unsanitary task. The filled box went to the duster which whirled the rags about to free them from loose dirt and lint. From the duster, the rags went to the Hollander engines for washing and bleaching. The beating roll of the Hollander was set for light pressure against the bedplate and high speed to circulate the water and rags fairly rapidly about the tub. Here the bleach started its work to remove as much as possible of both dye and dirt stains. Incidental to washing, the Hollander did a certain amount of beating with the result that by the time the washing was finished the rags no longer resembled woven cloth but were mangled to a mass of stringy fiber called "half-stuff."

There was, of course, some method of draining the wash-water from the half-stuff. Our records are not clear but it seems probable that draining rooms were

in use by 1810. These were brick lined chambers with a bottom outlet in which the half-stuff was left for a period of weeks while the water leached away and the bleach continued its work of whitening and softening the fibers.

From the drainers, the half-stuff went back to the Hollander engines on its way to becoming "stuff." This time the beating roll was set snugly against the sharpened bedplate for grinding, mashing and hydrating the fibers. The half-stuff, mixed again with water, moved sluggishly around the tub and under the Hollander roll for fifteen to twenty-four hours. Toward the end of this period, the papermaker often squeezed a handful of stuff seeking to feel with his fingers that greasy texture which would tell him that the beating was finished.

With beating, mechanization in the process of papermaking ceased in 1810. From the Hollander, the stuff passed to the vat where the vatman added water, stirred to keep the fibers suspended and went to work with his molds. Operating two vats, the production of the Burbank mill was 230 to 250 pounds per day and that limited output was supposed to provide wages for about seventeen workers as well as some return on the capital invested.

Ox Yoke—*Continued*

inches, and the yoke will not roll up on their necks; to use on a tongue, 8 x 10 is the right size; if oxen draw very high, make them 8½ x 12 to draw on a chain, and 8 x 11 on the tongue. The holes should always be made as I have stated above."

That this plan was not the ultimate in the design of ox-yokes was revealed two months later in the same magazine: "H.A.S., of Manchester, Conn., criticizes the ox-yoke, figured in the August number, on the ground that the holes for the bows are too close together. Such narrow bows may do, he says to draw in, but cattle will not back well in them. Narrow bows chafe the roots of the ears in backing or holding back going down hill. He formerly used yokes with bows only 10 inches wide, but never found his cattle to back easily until he put the bow-holes 12 inches apart."

All during this time yoke shops were turning out ox-yokes of their own design. "Gould's Ox Yokes and Bows" are advertised in Ruggles, Nourse, & Mason's catalog (Worcester, Mass., 1846) as "a celebrated yoke, of which we have all his different kinds and sizes, and can furnish with or without bows, and irons complete. We have also yokes from several other approved makers."

POTASH MANUFACTURE

by Jared Van Wagenen

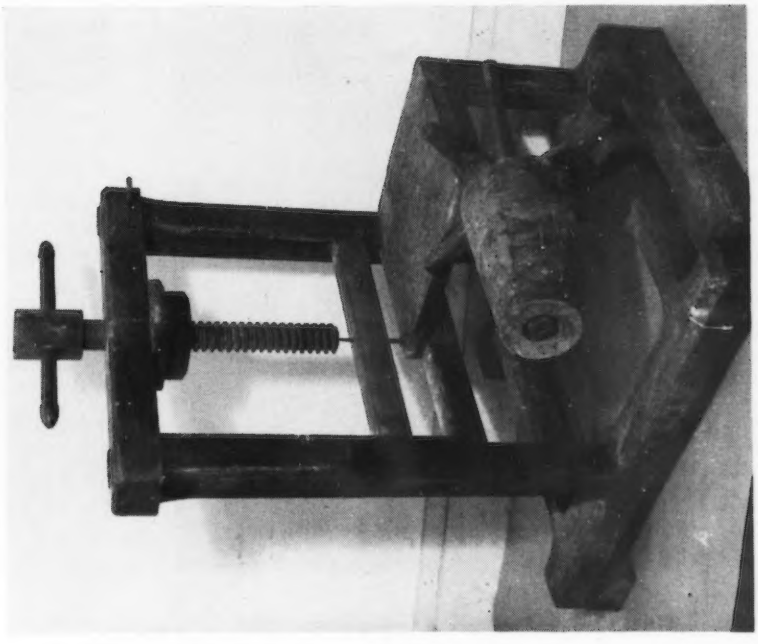
Potash is one of the articles which has long had an important place in the commerce of the world. Even before this chemical age, it was indispensable in dyeing, in soap-making, in glass manufacture, and for many other uses; while in the pioneer's kitchen, it was home-made potassium carbonate that took the place of the later "saleratus."

Before the potash mines of Germany were opened up, the commercial supply of this indispensable commodity was derived from leaching wood ashes — mainly in the United States, Canada and Russia.

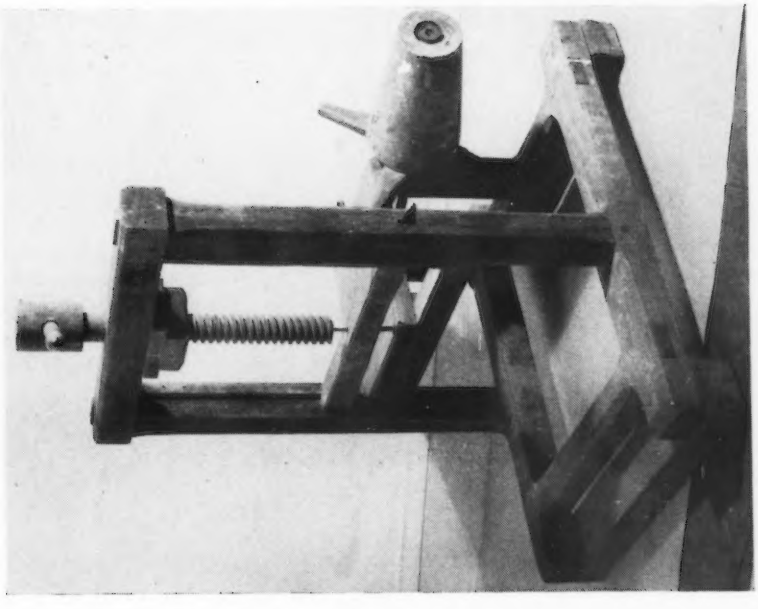
On the great day in October 1825, when the Erie Canal was formally opened, one Jeptha Simms was a clerk in a general store in Fort Plain, on the Mohawk. In the course of time he became the local historian of the Mohawk Valley and of neighboring counties, and so it came to pass that he wrote concerning many things. More than fifty years after the opening of the canal, he set down his recollections of that great celebration — the more interestingly because "he himself had been a part of what he told." As a merchant in a store on its banks, he was familiar with the history of the early and palmy days of the great waterway. He remembered, too, the "Durham" boats that even before the building of the canal plied the Mohawk River in large numbers, and he records that the three articles most commonly shipped east by freight were wheat, potash and whiskey. Perhaps it is characteristic of our changing world that one of these has disappeared from commerce and another during prohibition a commercial outlaw.

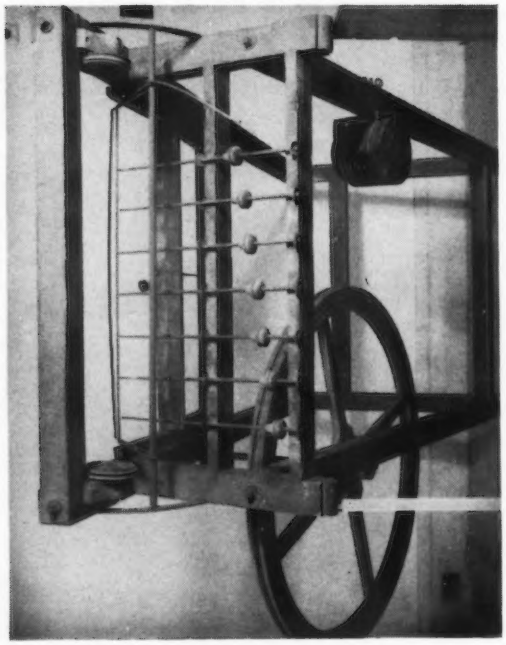
In any case, the manufacture of potash was once one of the very important industries of N. Y. state. In 1845 (I must continually quote this date because it is that of our earliest statistics) there were in our state 738 "asheries" and the value of their products was almost a million dollars ($909,194). Ten years later the number had dropped to only 68. Evidently it was a rapidly dying industry. As late as 1865 there still survived 54 asheries. In this case, as in others, the Civil War tended to keep alive a decaying industry.

For some first-hand information regarding asheries (and I can find absolutely no other source of knowledge) I am indebted to Mr. Lott Hall, of Gouverneur, St. Lawrence County, a farmer of rare intelligence and exact memories, whom I have known and whose friendship I have cherished through many years. He was born there in 1844 — a date still

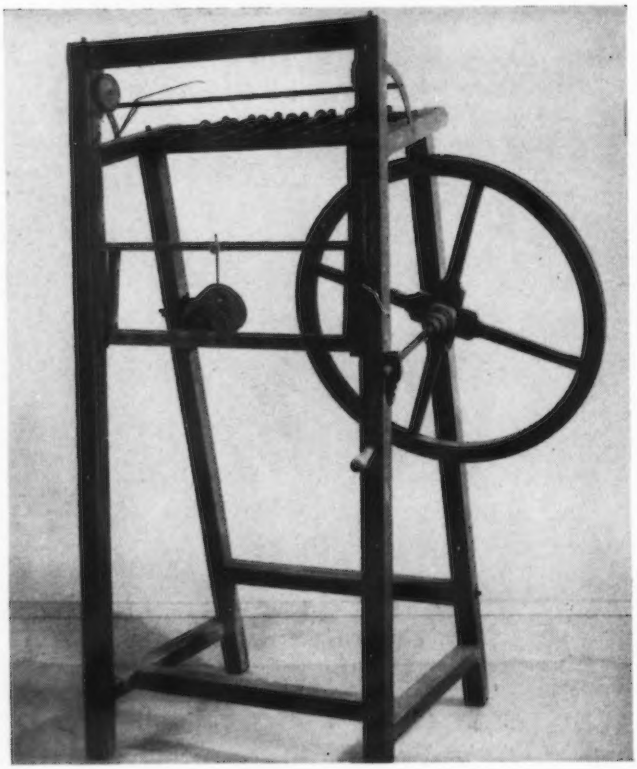


W'batsit Baileyji I
(see Editor's Note)





Whatsit
Baileyii II



within the pioneer period of that region — and as a young boy he became familiar with this industry, which, by the way, seems to have been more highly developed and to have lingered longer in St. Lawrence County than in any other part of the state. He writes me at length concerning the details of this one-time very important rural craft.

The trees were cut down, chopped into convenient lengths, hauled together and rolled into piles along with the limbs and brush, and then the whole heap burned. The ashes were then gathered up and leached and the resulting lye boiled in big "potash kettles" shaped like a half egg-shell. The bottom of these kettles was cast thick and heavy so as to endure the severe strain of evaporating the lye down to a solid mass. The resulting cake was a product known as "black salts" and was dark in color — largely because of the carbon, and impurities mixed with it. This "black salts" was the form in which it was sold by the farmer. The usual price was about $3.00 per hundred pounds, and Mr. Hall assures me that this was sometimes about the only real "cash money" the pioneer ever saw. At this same period butter was 14 cents per pound, but this was "in trade," not in cash. The "asheries" were establishments scattered thickly over some parts of the state, which purchased black salts from the farmers. At the asheries were brick kilns where the crude potash was subjected to a high temperature, which burned out the carbon and fused the mass into a bluish-white and much purer article, then known as "pearl-ash."

Making black salts was a work not without its risks and uncertainities. Sometimes after the burning of a huge log pile which represented a week of hard work, a sudden heavy shower would leach the ashes, and this entailed a total loss.

Not all farmers did their own leaching and boiling. Some of the asheries maintained teams which went around the country and collected the ashes, paying 8 cents per bushel for them — a rather surprising price in that day when a dollar was quite a large sum of money. I do not wonder that St. Lawrence County in New York counted 97 and Cattaragus 33 asheries. It would seem that it was once one of the most thriving and best paid industries in our state.

Mr. Hall writes me that there was a very wide difference in the value of different woods for potash. By common consent the very best was "water elm." He says that a single large tree of this species might be expected to yield as much as 200 pounds of black salts, and that the ashes were so rich that in gathering them up it was not unusual to find solid masses of fused potash as big as large potatoes and so pure that they would be thrown directly into the boiling kettle. Next in order of richness of ash he rates black ash, maple, bass wood, hickory and beech — adding that all the evergreens were so poor in potash that they were not deemed worth cutting and burning.

It seems certain, then, that a century and more ago, when the chief aim of every farmer was to maintain himself and family from within his own fence lines, many of our farmers were accustomed to add to their very scanty cash income by boiling down black salts — one of the very few products for which there was an assured and eager market. I may add that on this farm one of the great kettles was long used as a water tub for cattle and the name "potash kettle" clung to it, although I feel sure that none of us had any very clear ideas as to just the part that it once played in the farm economy.

DOYLESTOWN MEETING

The Annual Spring meeting of Early American Industries Association was held at Bucks County Historical Society in Doylestown, Pa., on Friday and Saturday, May 9th and 10th, 1947.

The Board of Directors met in the late morning of May 9th and continued over lunch time. The members' meeting scheduled for 2 o'clock was delayed until 2:40, as members had scattered over the museum adjoining the Historical Society to view the fascinating collections formed by Dr. Henry C. Mercer.

The meeting was opened by the President, Mr. Hatch, of the Early American Industries Association with remarks relative to the speakers and program. Mr. Edward R. Barnsley, President of the Bucks County Historical Society extended greetings and a welcome. The Treasurer reported a balance of $875.58 and an active membership of 502.

Brief mention was made of new chapters in California, Ohio, Wisconsin and Worcester, Mass.

It was voted to have *The Chronicle* include a column of advertising of people who want to buy or sell.

Sigmund F. Epstein, M. D. of New York City gave a talk on early American surgery illustrated with slides, followed by an informal talk by Horace M. Mann, curator of the Historical Society, on the history and background of the society and museum. Members of the Society then served tea to members

Continued on page 110

The Chronicle

issued occasionally for members of

EARLY AMERICAN INDUSTRIES ASS'N

The purpose of the association is to encourage the study and better understanding of early American industry, in the home, in the shop, on the farm, and on the sea, and especially to discover, identify, classify, preserve and exhibit obsolete tools, implements, utensils, instruments, vehicles, appliances and mechanical devices used by American craftsmen, farmers, housewives, mariners, professional men and other workers.

EDWARD DURELL, *President*
500 Dublin Ave., Columbus, Ohio

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WALLACE K. BROWN, *Vice President*
Monclair, N. J.

JOHN DAVIS HATCH, JR., *Editor*
125 Washington Ave., Albany, N. Y.

Communications regarding the contents of The Chronicle should be addressed to the Editor; Suggestions for members and other matters either to the President or the Secretary-Treasurer.

MEMBERSHIP: Regular membership $2.00. Supporting Members contribute $5.00 or more a year.

BACK NUMBERS of The Chronicle are available in some instances for fifty cents or one dollar, depending on rarity. Index to Volume I and II is available for one dollar each.

EDITOR'S NOTE

Editors are faced with either feast or famine. At the Sturbridge meeting last fall an excellent talk was given on the paper industry by Charles I. Foster, Director of the Worcester Historical Society. Mr. Foster later prepared this for publication. It was splendidly done, well documented with footnotes and, as it proved, long enough for *three* articles for *The Chronicle*. With this issue and the next the main part of his communication will appear in sections I and II. Later a third article, on the social implications of the industry, may also be used.

Part of the fun of the meetings of EAI have been the "Whatsits" sessions. Occasionally we have been able to get a drawing of a "whatsit" to reproduce.

Mrs. Theodore Bailey sent in photographs of two unusual and well constructed machines which were a puzzle and offered to pay the costs of cuts. Hence in this issue we have Whatsits Baileyii, I and II, looking for someone who might identify them.

Recently there appeared in *The Chronicle* articles on the *By-Gone Cobbler* and on *Flax*, both written by Jared Van Wagenen. These, and *Potash* in the present issue, are part of an invaluable small out of print handbook, originally prepared by the New York State Department of Agriculture and Markets, when under the direction of Judge Berne A. Perke. We are happy to learn that the New York State Historical Association now plans to re-issue this little booklet. Further announcement will be made later concerning it.

The Doylestown Meeting—*Continued*

of the EAI, after which they visited Font Hill, a fabulous estate built thirty-five years ago by Dr. Mercer. They were guided through by Mr. and Mrs. Frank K. Swain, the present keepers.

Dinner for everyone was at The Fountain House at 6 o'clock. Mr. Mann spoke in a pleasant informal manner of his experiences in collecting items for the museum in the Southern Highlands. His talk, in turn, prompted entertaining reminiscences by Charles Rufus Harte and Allen Eaton.

The Saturday morning meeting scheduled for 9:30, was called together with difficulty at 10:10 as members were again scattered over the museum and some had visited the Moravian Pottery, another of the activities originated by Dr. Mercer. Mr. Hatch gave a report on his interesting work of the past year as President of Early American Industries Association.

The nominating Committee's report, of which Charles Messer Stow was chairman, was read by Allen Eaton, a member of the committee, and the nominations were as follows: For President, Edward Durell of Columbus, Ohio; Vice-President, Wallace K. Brown, Montclair, New Jersey; Secretary-Treasurer, Mrs. Frank D. Peirce, Leicester, Mass., Trustees for three years—Newton C. Brainard, Hartford, Conn.; John W. Higgins, Worcester, Mass.; Frederick L. Lewton, Washington, D. C.; Bertram K. Little, Brookline, Mass.; Miss Janet MacFarlane, Cooperstown, N. Y.; C. Carroll Palmer, Plainfield, N. J.; George M. Simmons, Richmondville, N. Y.; Frank K. Swain, Doylestown, Pa.; Dr. Philip Batchelder, Rumford, R. I.; Mrs. W. B. Wolcott, Riverton, N. J.; and John S. Williams, Old Chatham, N.Y.

Mr. Hatch, having accepted the office of President on a temporary post war basis, was given a vote of confidence and thanks, with regret that he could not continue.

Due to the change in the Presidency, action on the wish of Mrs. Peirce to divide the office of Secretary-Treasurer, with two persons taking the positions rather than one, was put off to the succeeding year.

The business meeting closed with the election of the officers as nominated, with the Secretary casting one ballot.

An informal "Whatsit" discussion, led by C. Carroll Palmer followed, and diverse objects were passed around for guesses as to their identification. Members were also given a chance to bid on items brought in for auction.

MEMBERSHIP

Membership lists should be amended as follows: (N) indicates new member; (Ch) indicates change of address; (D) indicates decease.

DISTRICT OF COLUMBIA

Shannon, Herbert T. (941), 1505 H. Street, N. W. (D).

Visson, Mr. and Mrs. Andre (1475), 2715-36th Place, N. W. (7). (N).

Way, Elwood J. (1469), 1703 New York Avenue, N. W., (N).

PENNSYLVANIA

Pleasant Valley: Kane, William R. (1473). (N).

MASSACHUSETTS

North Cambridge: Carlton, W. M. (1468), 173 Harvey Street (40). (N).

Sheldonville: Anderson, Mrs. E. R. (1467), West Street. (N).

NEW HAMPSHIRE

Lisbon: Barbour, Alexander (335). (D).

NEW JERSEY

Middlebush: Archibald, Lauren S. (1321). (D).

NEW YORK

Cooperstown: Jones, Louis C. (1474), Farmers' Museum. (N).

New York City: Heidelberger, Mrs. Michael (227), 333 Central Park West. (D).

Windsor: Cooper, Miner J., (1470), 41 Main Street (N).

RHODE ISLAND

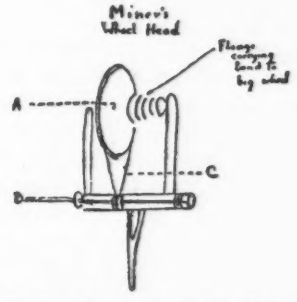
Providence: Clarke, Mrs. B. Earl, (1466), 18 George Street. (N).

WEST VIRGINIA

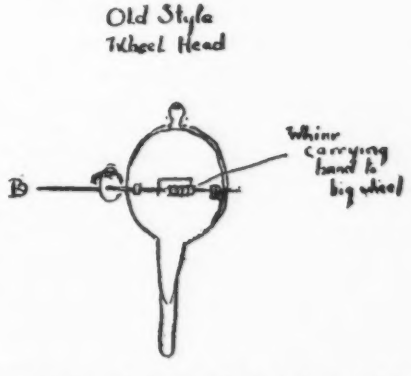
Elkin: Darby, H. M. (28). (D).

CORRECTION MINER'S HEAD

Ruth Gaines writes "unfortunately, the lettering on the cut of the two wheelheads (Vol. III, No. 11), i.e., Miner's and the oldstyle head, have been altered. *All* the letters refer to the upper, i.e., Miner's head. These letters in the original lettering on the photograph read A, C, B, in the order named. Also B refers to both wheelheads (as correctly stated under B in the caption). B, then, should be repeated on the lower wheelhead in the same relative position as B in the upper wheelhead, both designating the 'small pulley or whirr on shaft of spindle, in both wheelheads.'



That is, B should stand in the place of C in the lower head in the cut. C. refers to the cord or band in the upper wheelhead (Miner's) — as correctly stated in the caption. But C belongs only to this upper wheelhead, in the position between A and B, as I placed it in my original copy sent in. I am no artist, but the accompanying diagrams and the corrected lettering (that is, the restored lettering) will, I think, make the above clear, especially in context with paragraph two of the text.



I can see now that an orderly printer might think the unalphabetical arrangement a mistake on my part, and thus 'correct' me.

COMMUNICATIONS

From Janet R. MacFarlane, the Farmers' Museum, Coopertown, N. Y.

"We are holding weaving demonstrations at the Farmers' Museum this summer. Miss Virginia Parslow of Oaksville is setting up a loom with an old-time blue and white coverlet pattern, another loom with a carpet and the third showing the process of warping. We are much interested in having photographs or sketches sent in showing the different kinds of spindles for quill winders."

From C. Carroll Palmer:

I acquired an interesting brake for a sleigh in New York State. The under portion is of wrought iron in the general shape of a pair of ice tongs. The worn double two inch points project downward to lessen forward movement of the vehicle to which they are attached as they drag in ice or snow. The forward end is blacksmithed into a neat shackle holding a bent three and a half inch carriage bolt which attests to the pull exerted. Bolted and nailed to the iron is an eight and a half by nineteen inch pine platform roughly shaped like a wooden butter paddle. One remaining strip of an original three is nailed to the back top surface. These strips sufficed to prevent the rider's feet from slipping off as he clung to the rear of the moving sleigh. A hole bored near the end of the board allowed the brake to be tied up to the vehicle when not in use. In my judgment this crude contrivance must have been applied to a work or lumber sleigh to retard its progress downhill. Perhaps some of our readers could supply additional information concerning the use of this or other styles of sleigh brakes.

From Newton C. Brainard, Hartford, Conn.

"Although I have seen a considerable number of books on early trades, particularly in woodworking, I have never seen one on the manufacture of the wooden tools used by the carpenter. Many of the intricate molding tools and wooden planes must have required a great deal of skill. The bottoms of molding planes are beautifully finished and show no tool marks. There is an interesting uniformity in the way in which the edges are rounded or chamfered and the way this treatment is ended by a groove to prevent the cut tapering off to a form at the end where it would easily splinter.

The shaping of the opening in an ordinary plane is in itself an intricate piece of work involving considerable labor and yet they must have been done at a reasonable cost. Recently I have seen some rabbett planes with a skew blade with a tapered opening to throw the shaving to one side, which in itself was worth study to figure out how it was laid out and how it was made.

Do you suppose that some reader of *The Chronicle* could throw some light on these?

For sometime past I have noted down the names of Connecticut toolmakers on wooden carpenters' tools which I have seen. This list is by no means complete, as it would appear that there was a maker of these tools in almost every community. Where information has been available regarding these men it would appear that most of them were in business between 1800 and 1840. A number, of course, survived beyond the latter date. I have not seen many tools which could be identified as belonging to the period before 1800. The earlier tools rarely had place names and the character of many of the makers' stamps indicated a possibility that they were of English make.

I enclose a list of the names which I have seen so far, thinking that it might help to fill the columns of *The Chronicle.*

Arrowmannett — Middletown
Austin Baldwin — Middlefield
J. P. Brooks — East Hartford
Herman Chapin — New Hartford
Jonathan Church — Granby
Ebenezer Clark — Hartford
M. Copeland — Hartford
D. and M. Copeland — Hartford
G. E. Denison & Co. — Winthrop
J. & L. Denison — Saybrook (Winthrop)
J. Denison — Saybrook (Winthrop)
Giddings & Meek — Hartford
Kennedy & Co. — Hartford
Lyman Kennedy & Co. — Hartford
L. Parkhurst — Hartford
Phoenix Co. — Hitchcockville
Sargent & Co. — New Haven ?
Union Factory — (H. Chapin) — New Hartford?
H. Wetherell — Chatham
Henry Wetherell — East Hampton
James H. Wells — Hartford
T. Woodruff — Hartford

Editor's note: *The list is very useful and welcome. Can anyone help Mr. Brainard?*